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COMPUTATIONAL ANALYSIS AND METHODS FOR SOLIDS, STRUCTURES AND METAMATERIALS WITHIN GENERALIZED CONTINUA

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ABSTRACT

The minisymposium focuses on computational analysis of, and numerical methods for, solids, structures and metamaterials relying on generalized continuum theories such as micropolar, couple stress, micromorphic, strain gradient and nonlocal theories [1]. These theories have roots in the seminal works of Piola and Cauchy (1850s), Voigt (1880s) and the Cosserat brothers (1900s), whereas a major revival of the generalized theories took place in the 1960s by such famous names as Mindlin, Toupin and Eringen [1]. Although the second revival started in the modern times of the 1980s with a focus on simplified theories, the development of computational methods for generalized continua has had a minor role in the first decades of the movement. Very recently, however, there has been a growing interest for applying and developing appropriate computational methods for the non-standard problems of generalized continua (e.g. [2]) and accomplishing computational analysis for related applications (e.g. [3]).

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